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**TRW**

**SEMIANNUAL  
GROUNDWATER  
MONITORING REPORT  
FOR FEBRUARY 1999**

**THE MONADNOCK COMPANY  
18301 ARENTH AVENUE  
CITY OF INDUSTRY, CALIFORNIA**

**NOVEMBER 1999**

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**THE MONADNOCK COMPANY  
18301 ARENTH AVENUE  
CITY OF INDUSTRY, CALIFORNIA**

**November 1999**

**Prepared by:**

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## EXECUTIVE SUMMARY

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During the February 1999 semiannual monitoring event at the Monadnock site, water levels were monitored in all wells and water samples were collected in seven of the eight wells. Groundwater samples were analyzed for VOCs, chromium, cadmium, and cyanide.

The results of the February 1999 monitoring event indicate that the water table is currently at the lowest level historically recorded at the site. Potentiometric surface contours continue to demonstrate a west-southwesterly direction of groundwater flow at a horizontal hydraulic gradient of about 0.007. A slight downward vertical hydraulic gradient exists, similar to previous monitoring events.

The February 1999 analytical results indicate that the shallow plume of VOC-impacted groundwater beneath the site is oriented in a southwesterly direction. The plume appears to be limited in lateral extent (crossgradient) and extends offsite. The primary VOCs in the plume consist of trichloroethene (TCE), 1,1-dichloroethene (1,1-DCE), and tetrachloroethene (PCE).

Historical VOC concentration trends indicate that VOC levels onsite have declined substantially since monitoring began in July 1986. Concentrations onsite remained generally stable during operation of the groundwater remediation system from 1995 to 1998, but have declined to the lowest levels historically recorded since shutdown of the system in June 1998. VOC concentrations in offsite well MW-12 historically have exhibited no decline.

Chromium and cyanide concentrations have historically exceeded MCLs, primarily in well MW-2, but are currently below MCLs.

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## **1.0 INTRODUCTION**

This report presents the results for the February 1999 semiannual groundwater monitoring event at the Monadnock Company (Monadnock) facility (Figure 1), conducted by TRW Inc. (TRW) in accordance with the requirements of the California Regional Water Quality Control Board-Los Angeles Region (LARWQCB).

### **1.1 Site Background**

The Monadnock facility has been used to fabricate fasteners and electronic hardware since 1965. TRW was the owner and operator of the facility from 1968 to 1980. Previous manufacturing processes used at the facility included degreasing, heat treating, and metal plating. Volatile organic compounds (VOCs) and metals associated with these processes have been detected in groundwater beneath the facility. Additional information regarding the site history are provided in the site audit report (McLaren, 1990).

### **1.2 Hydrogeologic Conditions**

The first occurrence of groundwater beneath the site and vicinity is about 30 feet below ground surface within fine-grained materials consisting primarily of silty clay and silty to clayey sand. A coarser grained, gravelly sand occurs below a depth of about 85 feet. Six monitoring wells and the onsite extraction well (MW-2) are completed in the fine-grained deposits to depths between 45 and 60 feet (Table 1). One monitoring well (MW-11) extends into the lower gravelly sand and is completed to a depth of 97 feet. Additional information regarding the site hydrogeologic conditions is presented in the site investigation and groundwater treatment system report prepared by ID Environmental Associates (IDEA, 1995).

### **1.3 Groundwater Monitoring Program**

Four monitoring wells and the extraction well are located onsite, and three monitoring wells are located offsite, as shown on Figure 2. The groundwater monitoring program for the site, which is summarized in Table 1, includes semiannual water-level monitoring and sampling of all seven monitoring wells and the extraction well. Groundwater samples are analyzed for halogenated volatile organics by EPA Method 8010, total chromium and cadmium by EPA Method 6010B, and total cyanide by EPA Method 335.2.

### **1.4 Groundwater Remediation System**

A groundwater remediation system was implemented at the site in November 1995 utilizing shallow well MW-2 for extraction. Further details regarding the system are provided in Section 4.0.

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## **2.0 GROUNDWATER MONITORING ACTIVITIES**

### **2.1 Project Activities During Current Monitoring Period**

No additional site investigation or well installation was conducted during this monitoring period.

### **2.2 Groundwater Monitoring, Sampling, and Analyses**

TRW personnel conducted the February 1999 monitoring event. Water levels were measured in all wells on February 22, 1999. Groundwater samples were collected from seven of the eight wells on February 22 to 23, 1999. Well MW-1 was not sampled because the well casing has been damaged. TRW's standard field procedures are contained in Appendix A along with copies of the water-level measurement and groundwater purging logs.

## **3.0 RESULTS**

### **3.1 Water-Level Elevations**

Historic water-level elevation data for all monitoring wells are presented in Table 2. The historic data include the measured depths to groundwater and the calculated water-level elevations recorded for each well since June 1994. Potentiometric surface contours generated using the February 1999 water-level elevation data are presented on Figure 2. Hydrographs of water levels versus time in three representative wells located on and downgradient of the site (MW-2, MW-7, and MW-12) are presented on Figure 3.

The February 1999 water-level data indicate that the water table occurs at a depth of about 31 to 33 feet, which represents a decline of about two feet since the August 1998 monitoring event. Water levels have historically occurred at depths ranging from about 30 to 33 feet and are currently at the lowest levels recorded. The direction of groundwater flow in the shallow interval is to the west-southwest at an average horizontal hydraulic gradient of about 0.007, consistent with previous monitoring events.

A vertical hydraulic gradient in the downward direction exists, as indicated by a water-level elevation difference of about 0.8 foot, between the shallow and deeper well completion intervals. The magnitude and direction of the vertical gradient are similar to previous monitoring events.

### **3.2 Groundwater Analytical Results**

Results of the February 1999 groundwater analyses, in addition to historic results for previous monitoring events, are presented in Table 3. Total VOC isoconcentration contours were generated using the February 1999 analytical results and are shown on Figure 4. Hydrographs of VOC concentrations vs. time in three representative wells located on and downgradient of the site (MW-2, MW-7, and MW-12) are presented on Figure 5. Copies of the analytical laboratory reports and chain-of-custody forms are contained in Appendix B.

The February 1999 analytical results indicate that the plume of impacted groundwater beneath the site is oriented in a southwesterly direction, similar to the direction of groundwater flow. The axis of the plume is through the area of onsite well MW-2 and offsite well MW-12. The plume is limited in lateral extent, as crossgradient well MW-3 is not impacted, and crossgradient well MW-8 exhibits a substantially lower concentration of total VOCs, relative to wells MW-2 and MW-12. VOC concentrations attenuate with depth, as deeper well MW-11 exhibits appreciably lower VOC concentrations than nearby shallow wells MW-2 and MW-7. The primary VOCs in the plume consist of trichloroethene (TCE), 1,1-dichloroethene (1,1-DCE), and tetrachloroethene (PCE).

Historical concentration trends indicate that VOC levels onsite have declined substantially since monitoring began in July 1986. Concentrations remained relatively stable from 1995 through 1998, while the groundwater remediation system was in operation, although a temporary increase occurred in early 1998. Since shutdown of the system in June 1998, concentrations onsite have declined to the lowest levels historically recorded. VOC concentrations in offsite well MW-12, which was installed in 1995, have fluctuated appreciably but have exhibited no decline. The hydrographs of VOC concentrations versus time in wells MW-2, MW-7, and MW-12 demonstrate this trend (Figure 5).

Historic metals and cyanide results indicate that chromium and cyanide have exceeded Maximum Contaminant Levels (MCLs) during previous monitoring events. However, these impacts have been observed primarily in well MW-2. Concentrations of both compounds have declined substantially since the mid 1990s and are currently below the MCLs.

### **3.3 QA/QC Results**

Laboratory results for the February 1999 monitoring event were reviewed in accordance with U.S. Environmental Protection Agency (EPA) guidelines for data validation (National Functional Guidelines for Organic Data Review, June 1991). The data validation process consisted of reviewing the laboratory results for the following parameters: 1) completeness of the data package, 2) compliance with EPA-required holding times, 3) surrogate recovery results for each well sample, 4) agreement of dilution factors with reported detection limits, 5) presence or absence of analytes in the equipment, trip, and method blanks, 6) percent recovery and relative percent difference results for matrix spike and matrix spike duplicate analyses, and 7) percent recovery results for laboratory control samples.

Results of the data validation indicated that the laboratory data package was complete, no analysis holding times were exceeded, surrogate recovery results for each well sample were within acceptable limits, and reported detection limits were consistent with the sample dilution factors. VOCs were not detected in the equipment blank. The laboratory method blank results indicate that no detectable concentrations of VOCs, cadmium, chromium, or cyanide were present. The results of the LCSs indicate that all percent recoveries for VOCs, cadmium, and chromium were within acceptable limits. In addition, the results of the MS/MSD pairs for

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VOCs and metals all indicated percent recoveries and relative percent differences (RPDs) within acceptable limits. No LCS or MS/MSD results for cyanide were available. RPDs for the following analytes in the duplicate samples were within acceptable limits: trichloroethene (12%), chloroform (5%), 1,1-dichloroethane (8%), 1,2-dichloroethane (4%) total chromium (21%), 1,1-dichloroethene (14%), tetrachloroethane (2%), and 1,1,2-trichloroethane (6%). The RPD for total cyanide (92%) in the duplicate sample was not within acceptable limits.

#### **4.0 GROUNDWATER REMEDIATION SYSTEM**

The onsite groundwater remediation system is a pump-and-treat system utilizing shallow well MW-2. Extracted groundwater is treated onsite using carbon adsorption and ion exchange units, and is discharged to the onsite storm-drain system under a National Pollution Discharge Elimination System (NPDES) Permit (Permit No. CAD000048934).

The system began operation in November 1995 and operated continuously until June 1998, when well MW-2 sustained damage to the wellhead during site construction activities. The system has been out of service since that time. The system operates at an average flow rate of about 0.6 gallons per minute, and has extracted a total of about 627,000 gallons of groundwater since its startup in 1995. Approximately 2.3 pounds of VOCs were removed from the extracted groundwater.

Additional information regarding the groundwater system are presented in the site investigation and groundwater treatment system report prepared by ID Environmental Associates (IDEA, 1995).

#### **5.0 REFERENCES**

IDEA (Id Environmental Associates). 1995. Report of Monitoring Well Installation and Implementation of a Groundwater Remediation System, Monadnock Company Facility, 18301 Arenth Avenue, City of Industry, California. December.

McLaren. 1990. Site Audit of The Monadnock Company at 18301 East Arenth Avenue, City of Industry, California. February.

U.S. Environmental Protection Agency (EPA), 1991. National Functional Guidelines for Organic Data Review. June.



## TABLES

- 1 Well Completions and Sampling Information
- 2 Historical Water-Level Elevation Measurements
- 3 Historical Groundwater Analytical Results



**TABLE 1****WELL COMPLETIONS AND SAMPLING INFORMATION**

Well Number	Screen Interval (feet bgs)	Total Depth (feet bgs)	Top of Casing Elevation	Sampling Schedule (annual quarters)	EPA Test Methods
MW-1	29-49	49	412.68	1 <sup>st</sup> and 3 <sup>rd</sup>	8010 6010B 335.2
MW-2	25-45	45	408.01	1 <sup>st</sup> and 3 <sup>rd</sup>	8010 6010B 335.2
MW-3	24-44	44	408.52	1 <sup>st</sup> and 3 <sup>rd</sup>	8010 6010B 335.2
MW-4	20-60	60	412.95	1 <sup>st</sup> and 3 <sup>rd</sup>	8010 6010B 335.2
MW-7	26-56	56	409.16	1 <sup>st</sup> and 3 <sup>rd</sup>	8010 6010B 335.2
MW-8	26-56	56	409.00	1 <sup>st</sup> and 3 <sup>rd</sup>	8010 6010B 335.2
MW-11	77-97	97	408.93	1 <sup>st</sup> and 3 <sup>rd</sup>	8010 6010B 335.2
MW-12	19-49	49	406.91	1 <sup>st</sup> and 3 <sup>rd</sup>	8010 6010B 335.2

bgs - below ground surface

**TABLE 2****HISTORICAL WATER-LEVEL ELEVATION MEASUREMENTS**

Well Number	Date Measured	Depth to Water (feet below top of casing)	Top of Casing Elevation <sup>(a)</sup> (feet, MSL)	Water Surface Elevation <sup>(a)</sup> (feet, MSL)
MW-1	Aug-96	31.83	412.68	380.85
	Jan-90	33.94		378.74
	Jun-94	32.27		380.41
	Aug-94	32.49		380.19
	Mar-95	31.82		380.86
	Aug-95	31.55		381.13
	Feb-96	32.57		380.11
	Aug-96	32.70		379.98
	Feb-97	32.13		380.55
	Aug-97	32.61		380.07
	Feb-98	32.73		379.95
	Aug-98	NM		NA
	Feb-99	33.26		379.42
MW-2	Aug-86	29.94	408.01	378.07
	Jan-90	31.44		376.57
	Jun-94	30.25		377.76
	Aug-94	30.55		377.46
	Mar-95	29.73		378.28
	Aug-95	29.84		378.17
	Feb-96	NM		NA
	Aug-96	NM		NA
	Feb-97	NM		NA
	Aug-97	NM		NA
	Feb-98	NM		NA
	Sep-98*	29.88		378.13
	Feb-99	31.15		376.86
MW-3	Aug-86	30.14	408.52	378.38
	Jan-90	29.00		379.52
	Jun-94	30.21		378.31
	Aug-94	30.74		377.78
	Mar-95	29.86		378.66
	Aug-95	29.94		378.58
	Feb-96	30.89		377.63
	Aug-96	31.05		377.47
	Feb-97	30.39		378.13
	Aug-97	31.00		377.52
	Feb-98	30.94		377.58
	Aug-98	29.20		379.32
	Feb-99	31.35		377.17
MW-4	Jan-90	33.92	412.95	379.03
	Jun-94	32.80		380.15
	Aug-94	32.99		379.96
	Mar-95	32.28		380.67
	Aug-95	32.04		380.91

# TABLE 2

## HISTORICAL WATER-LEVEL ELEVATION MEASUREMENTS

Well Number	Date Measured	Depth to Water (feet below top of casing)	Top of Casing Elevation <sup>(a)</sup> (feet, MSL)	Water Surface Elevation <sup>(a)</sup> (feet, MSL)
	Feb-96	33.05		379.90
	Aug-96	33.17		379.78
	Feb-97	32.57		380.38
	Aug-97	33.10		379.85
	Feb-98	33.23		379.72
	Aug-98	31.05		381.90
	Feb-99	33.35		379.60
MW-7	Jan-90	31.68	409.16	377.48
	Jun-94	31.35		377.81
	Aug-94	31.71		377.45
	Mar-95	31.03		378.13
	Aug-95	30.98		378.18
	Feb-96	32.06		377.10
	Aug-96	32.11		377.05
	Feb-97	31.41		377.75
	Aug-97	32.15		377.01
	Feb-98	31.92		377.24
	Aug-98	30.25		378.91
	Feb-99	32.40		376.76
MW-8	Jan-90	32.49	409.00	376.51
	Jun-94	31.25		377.75
	Aug-94	31.54		377.46
	Mar-95	30.95		378.05
	Aug-95	30.75		378.25
	Feb-96	31.66		377.34
	Aug-96	31.78		377.22
	Feb-97	31.20		377.80
	Aug-97	31.72		377.28
	Feb-98	31.77		377.23
	Aug-98	29.95		379.05
	Feb-99	32.20		376.80
MW-11	Jan-90	33.16	408.93	375.77
	Jun-94	31.59		377.34
	Aug-94	32.07		376.86
	Mar-95	31.26		377.67
	Aug-95	31.28		377.65
	Feb-96	32.13		376.80
	Aug-96	32.35		376.58
	Feb-97	31.65		377.28
	Aug-97	32.30		376.63
	Feb-98	32.25		376.68
	Aug-98	30.40		378.53
	Feb-99	32.95		375.98

**TABLE 2****HISTORICAL WATER-LEVEL ELEVATION MEASUREMENTS**

Well Number	Date Measured	Depth to Water (feet below top of casing)	Top of Casing Elevation <sup>(a)</sup> (feet, MSL)	Water Surface Elevation <sup>(a)</sup> (feet, MSL)
MW-12	Aug-95	30.50	406.91	376.41
	Feb-96	30.70		376.21
	Aug-96	30.95		375.96
	Feb-97	30.00		376.91
	Aug-97	31.23		375.68
	Feb-98	31.10		375.81
	Aug-98	29.78		377.13
	Feb-99	32.00		374.91

<sup>(a)</sup> - Elevations relative to mean sea level (MSL)

NM - Not Measured

NA - Not Available

\* - Water level measured on September 29, 1998.

TABLE 3

## HISTORICAL GROUNDWATER ANALYTICAL RESULTS

Well Number	1,1,1-TCA (µg/l)	1,1,2-TCA (µg/l)	1,1-DCA (µg/l)	1,1-DCE (µg/l)	1,2-DCA (µg/l)	CFM (µg/l)	DFM (µg/l)	PCE (µg/l)	TCE (µg/l)	Cadmium (µg/l)	Chromium (µg/l)	Cyanide (mg/l)
<b>Drinking Water Standard</b>	<b>200</b>	<b>32</b>	<b>5</b>	<b>6</b>	<b>0.5</b>	<b>100<sup>1</sup></b>	<b>NE</b>	<b>5</b>	<b>5</b>	<b>10</b>	<b>50</b>	<b>0.2<sup>2</sup></b>
<b>MW-1</b>												
Jul-86	<25	NA	NA	NA	NA	NA	ND	<25	<25	NA	NA	NA
Sep-86	NA	NA	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA
Nov-86	NA	NA	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA
Feb-87	NA	NA	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA
Mar-87	NA	NA	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA
Sep-87	NA	NA	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA
Feb-88	NA	NA	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA
Jan-89	ND	NA	NA	NA	NA	NA	ND	ND	ND	NA	NA	NA
Jun-89	ND	NA	NA	ND	NA	NA	ND	ND	ND	NA	NA	NA
Jan-90	ND	NA	NA	ND	NA	NA	ND	1.3	ND	NA	NA	NA
Jun-94	<1	<1	<1	<1	<1	<1	ND	<1	<1	NA	NA	NA
Aug-94	<1	<1	<1	<1	<1	<1	ND	<1	<1	<1	7.7	<0.01
Mar-95	<1	<1	<1	<1	<1	<1	ND	<1	<1	<5	<10	<0.01
Aug-95	<1	<1	<1	1.5	<1	<1	ND	<1	<1	<5	<10	<0.1
Feb-96	<1	<1	<1	<1	<1	<1	ND	<1	<1	<5	<10	<0.2
Aug-96	<1	<1	<1	<1	<1	<1	ND	<1	<1	<5	<10	<0.01
Feb-97	<1	<1	<1	<1	<1	<1	ND	<1	<1	<5	<10	<0.01
Aug-97	<1	<1	<1	<1	<1	<1	ND	<1	<1	<5	<10	<0.01
Feb-98	<1	<1	<1	<1	<1	<1	ND	1.06	<1	<5	<10	<0.01
Aug-98	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Feb-99	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
<b>MW-2</b>												
Jul-86	380	NA	NA	NA	NA	NA	ND	310	710	NA	NA	NA
Sep-86	180	NA	NA	NA	NA	NA	ND	600	560	NA	NA	NA
Nov-86	350	NA	NA	NA	NA	NA	ND	770	710	NA	NA	NA
Feb-87	77	NA	NA	NA	NA	NA	ND	190	620	NA	NA	NA
Mar-87	NA	NA	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA
Sep-87	12	NA	NA	NA	NA	NA	ND	102	182	NA	NA	NA
Feb-88	25	NA	NA	NA	NA	NA	ND	78	102	NA	NA	NA
Jan-89	ND	NA	NA	NA	NA	NA	ND	70	120	NA	NA	NA
Jun-89	ND	NA	NA	180	NA	NA	ND	320	270	NA	NA	NA
Jan-90	7	NA	NA	840	NA	NA	ND	410	460	NA	NA	NA
Jun-94	<1	21	10	120	3.3	2.4	ND	130	590	NA	NA	NA
Aug-94	<1	19	8.6	160	3.4	1.3	ND	100	390	<1	162	0.57
Mar-95	<1	17.5	8.3	176	4.1	2.5	ND	102	330	<5	206	<0.01
Aug-95	<1	<1	5.8	82	2	2.1	ND	12	170	<5	164	1.82
Feb-96	<2.5	3.5	<2.5	98	<2.5	<2.5	ND	69	200	<5	85.6	1.60
Aug-96	<1	5.3	3.6	95	<1	1.1	ND	53	220	<5	60.8	0.25

TABLE 3

## HISTORICAL GROUNDWATER ANALYTICAL RESULTS

Well Number	1,1,1-TCA (µg/l)	1,1,2-TCA (µg/l)	1,1-DCA (µg/l)	1,1-DCE (µg/l)	1,2-DCA (µg/l)	CFM (µg/l)	DFM (µg/l)	PCE (µg/l)	TCE (µg/l)	Cadmium (µg/l)	Chromium (µg/l)	Cyanide (mg/l)
<b>Drinking Water Standard</b>	<b>200</b>	<b>32</b>	<b>5</b>	<b>6</b>	<b>0.5</b>	<b>100<sup>1</sup></b>	<b>NE</b>	<b>5</b>	<b>5</b>	<b>10</b>	<b>50</b>	<b>0.2<sup>2</sup></b>
Aug-96 Dup	<1	5.5	3.7	97	1.2	1.2	ND	54	220	NA	NA	NA
Feb-97	<1	4.7	2.2	70	1.2	<1	ND	51.8	220	<5	43.4	0.693
Aug-97	<5	<5	<5	160	<5	<5	ND	79	260	<5	42	0.16
Feb-98	<1	6.76	5.65	325	2.89	2.1	ND	152	456	<5	47	0.363
Sep-98*	<0.5	2.9	2.1	89	1.1	<0.5	<0.5	48	190	<5	79	0.420
Feb-99	<0.5	1.2	0.7	26	<1	<0.5	<0.5	14	61	<5	47**	0.180
<b>MW-3</b>												
Jul-86	<5	NA	NA	NA	NA	NA	ND	<5	<5	NA	NA	NA
Sep-86	NA	NA	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA
Nov-86	6	NA	NA	NA	NA	NA	ND	100	4	NA	NA	NA
Feb-87	NA	NA	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA
Mar-87	NA	NA	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA
Sep-87	NA	NA	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA
Feb-88	2	NA	NA	NA	NA	NA	ND	6.2	2.6	NA	NA	NA
Jan-89	ND	NA	NA	NA	NA	NA	ND	ND	ND	NA	NA	NA
Jun-89	1	NA	NA	ND	NA	NA	ND	6	2	NA	NA	NA
Jan-90	ND	NA	NA	ND	NA	NA	ND	ND	2	NA	NA	NA
Jun-94	<1	<1	<1	<1	<1	<1	ND	<1	<1	NA	NA	NA
Aug-94	<1	<1	<1	<1	<1	<1	ND	<1	<1	1.4	14.3	<0.01
Mar-95	<1	<1	<1	<1	<1	<1	ND	<1	<1	<5	23.9	<0.01
Aug-95	<1	<1	<1	1.4	<1	<1	ND	<1	<1	<5	<10	<0.1
Feb-96	<1	<1	<1	<1	<1	<1	ND	<1	<1	<5	<10	<0.2
Aug-96	<1	<1	<1	<1	<1	<1	ND	<1	<1	<5	<10	<0.01
Feb-97	<1	<1	<1	<1	<1	<1	ND	<1	<1	<5	<10	<0.01
Aug-97	<1	<1	<1	<1	<1	<1	ND	<1	<1	<5	<10	<0.01
Feb-98	<1	<1	<1	<1	<1	<1	ND	<1	<1	<5	<10	<0.01
Aug-98	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<1	3.52	<0.05
Feb-99	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<5	<5	<0.05
<b>MW-4</b>												
Jul-86	NA	NA	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA
Sep-86	NA	NA	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA
Nov-86	NA	NA	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA
Feb-87	NA	NA	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA
Mar-87	0.5	NA	NA	NA	NA	NA	ND	1.6	1	NA	NA	NA
Sep-87	NA	NA	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA
Feb-88	NA	NA	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA
Jan-89	NA	NA	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA
Jun-89	NA	NA	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA
Jan-90	ND	NA	NA	ND	NA	NA	ND	1.9	ND	NA	NA	NA

TABLE 3

## HISTORICAL GROUNDWATER ANALYTICAL RESULTS

Well Number	1,1,1-TCA (µg/l)	1,1,2-TCA (µg/l)	1,1-DCA (µg/l)	1,1-DCE (µg/l)	1,2-DCA (µg/l)	CFM (µg/l)	DFM (µg/l)	PCE (µg/l)	TCE (µg/l)	Cadmium (µg/l)	Chromium (µg/l)	Cyanide (mg/l)
<b>Drinking Water Standard</b>	<b>200</b>	<b>32</b>	<b>5</b>	<b>6</b>	<b>0.5</b>	<b>100<sup>1</sup></b>	<b>NE</b>	<b>5</b>	<b>5</b>	<b>10</b>	<b>50</b>	<b>0.2<sup>2</sup></b>
Jun-94	<1	<1	<1	<1	<1	<1	ND	<1	<1	NA	NA	NA
Aug-94	<1	<1	<1	<1	<1	<1	ND	<1	<1	<1	6.4	<0.01
Mar-95	<1	<1	<1	<1	<1	<1	ND	<1	<1	<5	<10	2.67
Aug-95	<1	<1	<1	1.1	<1	<1	ND	<1	<1	<5	<10	<0.1
Feb-96	<1	<1	<1	<1	<1	<1	ND	<1	<1	<5	<10	<0.2
Aug-96	<1	<1	<1	<1	<1	<1	ND	<1	<1	<5	<10	<0.01
Feb-97	<1	<1	<1	<1	<1	<1	ND	<1	<1	<5	<10	<0.01
Aug-97	<1	<1	<1	<1	<1	<1	ND	1.2	<1	<5	<10	<0.01
Feb-98	<1	<1	<1	<1	<1	<1	ND	1.33	<1	<5	<10	<0.01
Aug-98	<0.5	<0.5	<0.5	<0.5	<1	<0.5	1.8	<0.5	<0.5	<1	5.89	<0.05
Feb-99	<0.5	<0.5	<0.5	<0.5	<1	<0.5	1.8	0.6	<0.5	<5	38	<0.05
<b>MW-7</b>												
Jul-86	NA	NA	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA
Sep-86	NA	NA	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA
Nov-86	NA	NA	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA
Feb-87	NA	NA	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA
Mar-87	48	NA	NA	NA	NA	NA	ND	81	456	NA	NA	NA
Sep-87	56	NA	NA	NA	NA	NA	ND	93	200	NA	NA	NA
Feb-88	8.2	NA	NA	NA	NA	NA	ND	74	152	NA	NA	NA
Jan-89	ND	NA	NA	NA	NA	NA	ND	150	200	NA	NA	NA
Jun-89	50	NA	NA	42	NA	NA	ND	60	66	NA	NA	NA
Jan-90	1.6	NA	NA	440	NA	NA	ND	160	400	NA	NA	NA
Jun-94	<1	2.8	<1	40	<1	1.8	ND	42	280	NA	NA	NA
Aug-94	<1	17	6.2	140	1.7	2.4	ND	60	310	1.3	115	0.76
Mar-95	<1	4.5	<1	66	<1	<1	ND	28	145	<5	49.6	0.14
Aug-95	<1	<1	<1	43	<1	<1	ND	1.9	130	<5	26.5	0.025
Feb-96	<1	<1	<1	36	<1	<1	ND	18	120	<5	36.3	0.37
Aug-96	<1	4.5	1.3	46	<1	<1	ND	20	87	<5	38.2	0.30
Feb-97	<1	3.6	<1	41	<1	<1	ND	31	170	<5	35	0.126
Feb-97 Dup	<1	4.1	1.1	47	<1	<1	ND	35	180	NA	NA	NA
Aug-97	<1	<1	<1	43	<1	<1	ND	18	105	<5	17.4	<0.01
Aug-97 Dup	<5	<5	<5	45	<5	<5	ND	18	150	NA	NA	NA
Feb-98	<1	5.89	2.54	172	1.02	1.24	ND	57.3	222	<5	19.6	0.353
Aug-98	<0.5	<0.5	0.8	53	<1	<0.5	ND	16	170	<1	31.2	<0.05
Aug-98 Dup	<0.5	<0.5	0.7	60	<1	<0.5	<0.5	18	180	NA	NA	NA
Feb-99	<0.5	1.1	0.6	24	<1	<0.5	<0.5	9	82	<5	46	<0.05
<b>MW-8</b>												
Jul-86	NA	NA	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA
Sep-86	NA	NA	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA

TABLE 3

## HISTORICAL GROUNDWATER ANALYTICAL RESULTS

Well Number	1,1,1-TCA (µg/l)	1,1,2-TCA (µg/l)	1,1-DCA (µg/l)	1,1-DCE (µg/l)	1,2-DCA (µg/l)	CFM (µg/l)	DFM (µg/l)	PCE (µg/l)	TCE (µg/l)	Cadmium (µg/l)	Chromium (µg/l)	Cyanide (mg/l)
<b>Drinking Water Standard</b>	<b>200</b>	<b>32</b>	<b>5</b>	<b>6</b>	<b>0.5</b>	<b>100<sup>1</sup></b>	<b>NE</b>	<b>5</b>	<b>5</b>	<b>10</b>	<b>50</b>	<b>0.2<sup>2</sup></b>
Nov-86	NA	NA	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA
Feb-87	NA	NA	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA
Mar-87	32	NA	NA	NA	NA	NA	ND	110	180	NA	NA	NA
Sep-87	3	NA	NA	NA	NA	NA	ND	27	47	NA	NA	NA
Feb-88	NA	NA	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA
Jan-89	ND	NA	NA	NA	NA	NA	ND	80	90	NA	NA	NA
Jun-89	30	NA	NA	180	NA	NA	ND	320	400	NA	NA	NA
Jan-90	ND	NA	NA	100	NA	NA	ND	56	160	NA	NA	NA
Jun-94	<1	<1	<1	16	<1	<1	ND	6.8	34	NA	NA	NA
Aug-94	<1	<1	9.4	<1	<1	<1	ND	5.5	22	4.8	135	<0.01
Mar-95	<1	<1	<1	11.7	<1	<1	ND	3.3	18.8	<5	20.4	<0.01
Aug-95	<1	<1	<1	7.9	<1	<1	ND	<1	19	<5	14.4	<0.1
Feb-96	<1	<1	<1	17	<1	<1	ND	11	35	<5	20.5	<0.2
Aug-96	<1	<1	1.6	16	<1	<1	ND	11	39	<5	<10	<0.01
Feb-97	<1	<1	<1	8.3	<1	<1	ND	12	33	<5	<10	<0.01
Aug-97	<1	<1	1.4	14	<1	<1	ND	12	32	<5	<10	<0.01
Feb-98	<1	<1	2.26	31.1	<1	<1	ND	23	52	<5	<10	<0.01
Aug-98	<0.5	<0.5	<0.5	2.6	<1	<0.5	<0.5	2.3	8.5	4.21	5.22	<0.05
Feb-99	<0.5	<0.5	0.6	6.2	<1	<0.5	0.6	4.7	15	<5	5	<0.05
<b>MW-11</b>												
Jul-86	NA	NA	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA
Sep-86	NA	NA	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA
Nov-86	NA	NA	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA
Feb-87	NA	NA	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA
Mar-87	NA	NA	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA
Sep-87	NA	NA	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA
Feb-88	ND	NA	NA	NA	NA	NA	ND	ND	26	NA	NA	NA
Jan-89	ND	NA	NA	NA	NA	NA	ND	200	20	NA	NA	NA
Jun-89	ND	NA	NA	50	NA	NA	ND	10	270	NA	NA	NA
Jan-90	ND	NA	NA	231	NA	NA	ND	5.5	50	NA	NA	NA
Jun-94	<1	<1	<1	<1	<1	1.8	ND	7	86	NA	NA	NA
Aug-94	<1	<1	16	<1	<1	<1	ND	4.7	49	<1	13	<0.01
Mar-95	<1	<1	<1	20.3	<1	<1	ND	4.1	59.6	<5	13.1	<0.01
Aug-95	<1	<1	<1	12	<1	<1	ND	<1	43	<5	13.3	<0.01
Feb-96	<1	<1	<1	12	<1	<1	ND	3.8	40	<5	<10	<0.2
Aug-96	<1	<1	<1	12	<1	<1	ND	4.8	45	<5	<10	<0.01
Feb-97	<1	<1	<1	<1	<1	<1	ND	4.7	47	<5	<10	<0.01
Aug-97	<1	<1	<1	9.3	<1	<1	ND	4.3	30	<5	<10	<0.01



# TABLE 3

## HISTORICAL GROUNDWATER ANALYTICAL RESULTS

Well Number	1,1,1-TCA (µg/l)	1,1,2-TCA (µg/l)	1,1-DCA (µg/l)	1,1-DCE (µg/l)	1,2-DCA (µg/l)	CFM (µg/l)	DFM (µg/l)	PCE (µg/l)	TCE (µg/l)	Cadmium (µg/l)	Chromium (µg/l)	Cyanide (mg/l)
<b>Drinking Water Standard</b>	<b>200</b>	<b>32</b>	<b>5</b>	<b>6</b>	<b>0.5</b>	<b>100<sup>1</sup></b>	<b>NE</b>	<b>5</b>	<b>5</b>	<b>10</b>	<b>50</b>	<b>0.2<sup>2</sup></b>
Feb-98	<1	<1	<1	23.6	<1	<1	ND	10.6	63.1	<5	<10	<0.01
Feb-98 Dup	<1	<1	<1	21.2	<1	<1	ND	10	59.4	NA	NA	NA
Aug-98	<0.5	<0.5	<0.5	9.1	<1	<0.5	1.4	2.7	37	<1	4.15	<0.05
Feb-99	<0.5	<0.5	<0.5	8.3	<1	<0.5	<0.5	3	38	<5	<5	<0.05
<b>MW-12</b>												
Aug-95	<1	<1	6.7	250	7	4.1	ND	13	540	<5	25.6	0.502
Feb-96	<5	<5	<5	230	<5	<5	ND	60	380	<5	37.5	0.38
Feb-96 Dup	<5	<5	<5	210	<5	<5	ND	57	360	NA	N.A	NA
Aug-96	<1	9.2	5.2	210	4.5	2.9	ND	65	330	<5	30.4	0.37
Feb-97	<1	2.4	1.2	66	1.1	1.1	ND	39	220	<5	25.7	0.051
Aug-97	<5	<5	<5	120	<5	<5	ND	60	270	<5	32.9	0.11
Feb-98	<1	8.91	4.97	227	5.04	3.4	ND	60.7	489	<5	59.2	0.111
Aug-98	<0.5	2.4	1.5	110	1.8	0.6	<0.5	21	190	<1	30.7	0.16
Feb-99	<0.5	6.4	3.9	300	2.7	2.2	<0.5	47	520	<5	23**	0.19
Feb-99 Dup	<0.5	6.8	3.6	260	2.8	2.1	<0.5	48	460	<5	NA	0.07

Drinking water standards are Maximum Contaminant Levels as established by the California Department of Health Services.

1 - Drinking water standard is for total trihalomethanes.

2 - Drinking water standard is the Maximum Contaminant Level as established by the U.S. Environmental Protection Agency.

NA - Not Analyzed

ND - Not Detected

NE - Not Established

< - Not detected at the detection limit shown.

\* - Well sampled on September 29, 1998, as well required repair before sampling could occur.

\*\* - Well resampled for dissolved chromium on May 7, 1999.

1,1,1-TCA - 1,1,1-Trichloroethane

1,1,2-TCA - 1,1,2-Trichloroethane

1,1-DCA - 1,1-Dichloroethane

1,1-DCE - 1,1-Dichloroethene

1,2-DCA - 1,2-Dichloroethane

CFM - Chloroform

DFM - Dichlorodifluoromethane

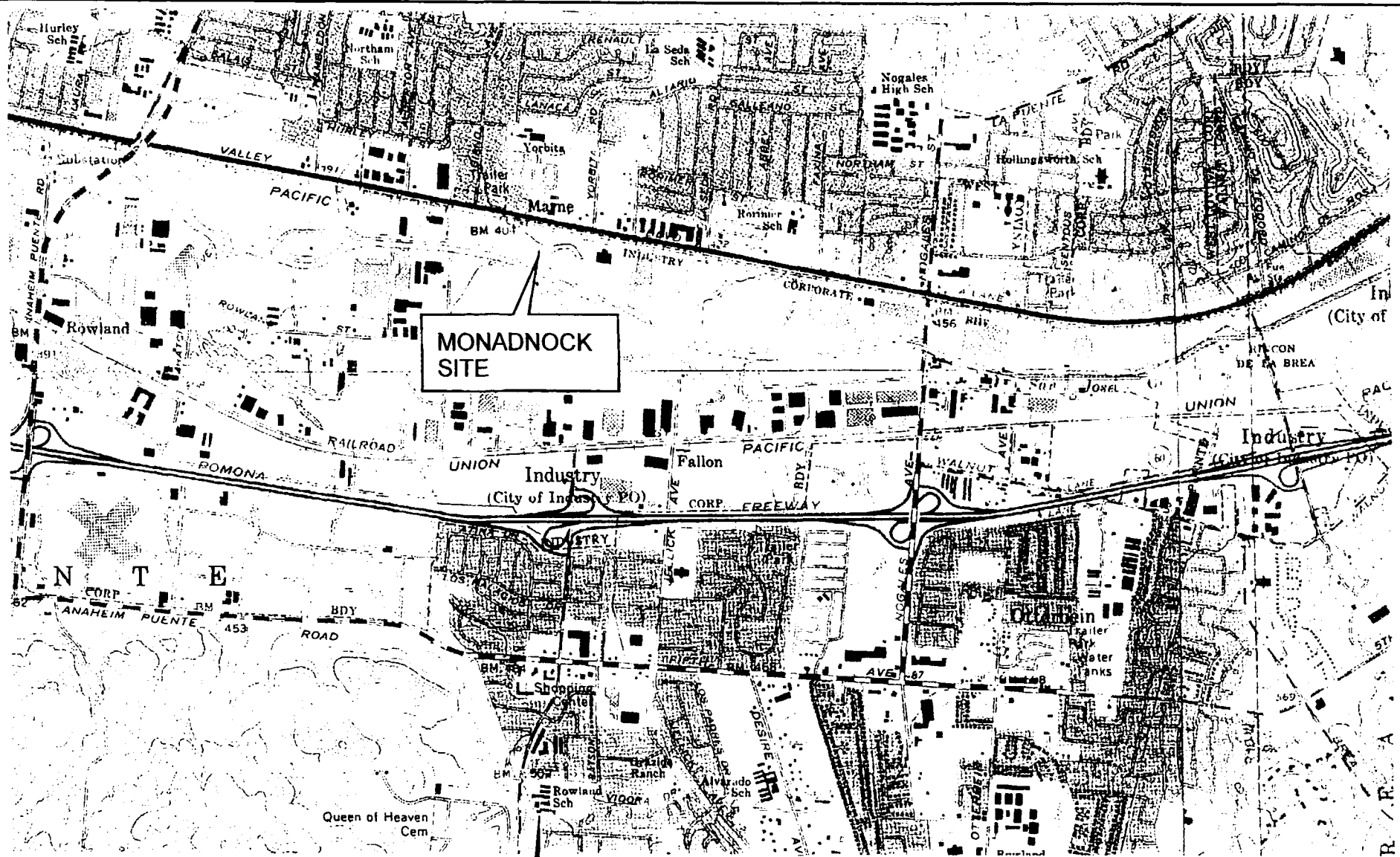
PCE - Tetrachloroethene

TCE - Trichloroethene



## FIGURES

- 1 Site Location Map
- 2 Potentiometric Surface Map - February 1999
- 3 Water-Level Elevations vs. Time - Wells MW-2,  
MW-7 and MW-12
- 4 Total VOC Concentration Contour Map - February 1999
- 5 Total VOC Concentrations vs Time - Wells MW-2,  
MW-7 and MW-12



Scale 1000 0 1000 2000 3000 4000 feet

REFERENCE: USGS 7.5-MINUTE QUADRANGLE BALDWIN PARK, CALIFORNIA DATED 1964, PHOTO REVISED 1981.

REVISION		REVISIONS	
NO.	BY	DATE	DESCRIPTION
0	LH	5-22-88	CLIENT REVIEW

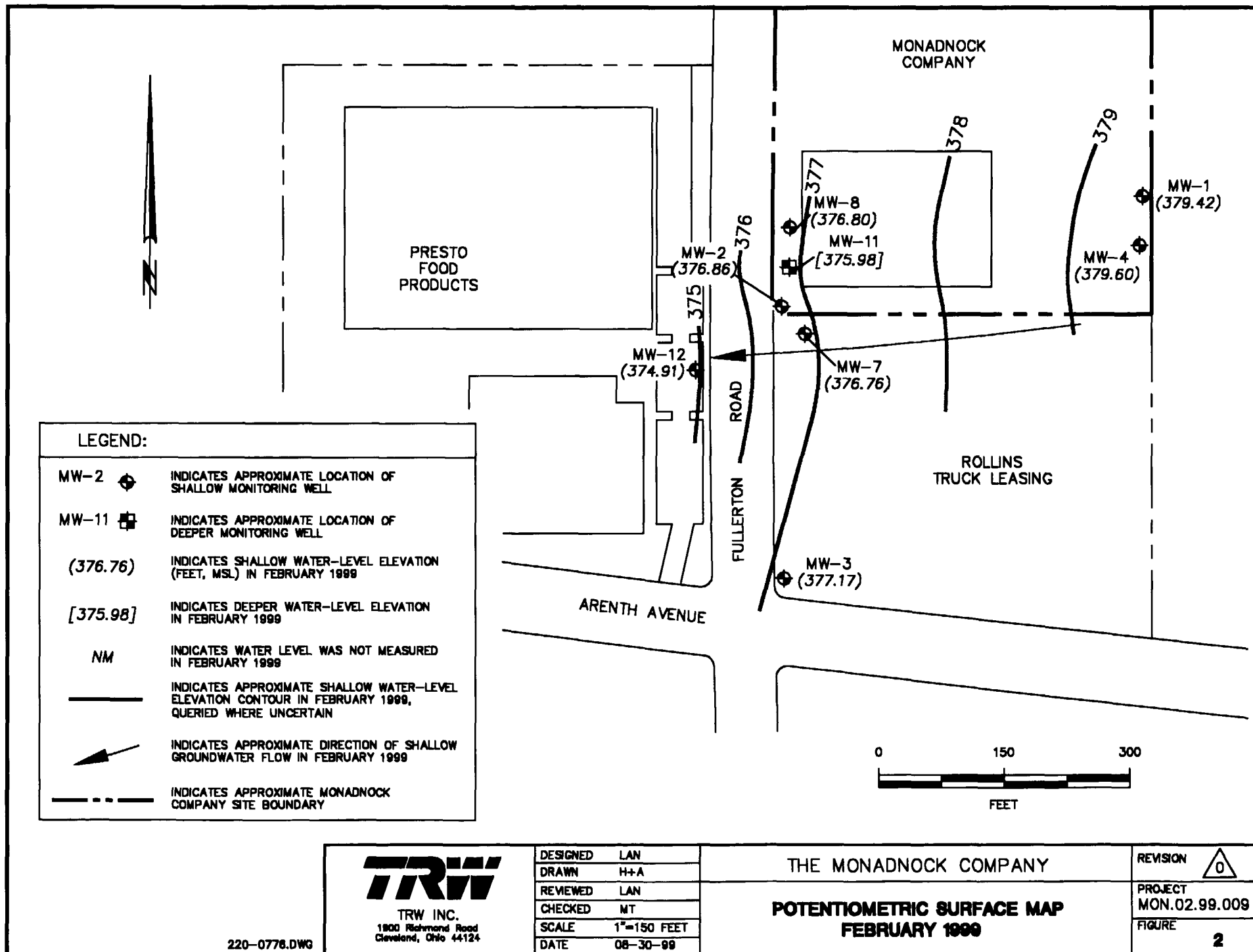


TRW INC.

THE MONADNOCK COMPANY

SITE LOCATION MAP

PROJECT NO.	DRAWN BY S/1640	CHECKED BY: MT
ART NO. 9602149	FIGURE 1-1	



220-0776.DWG



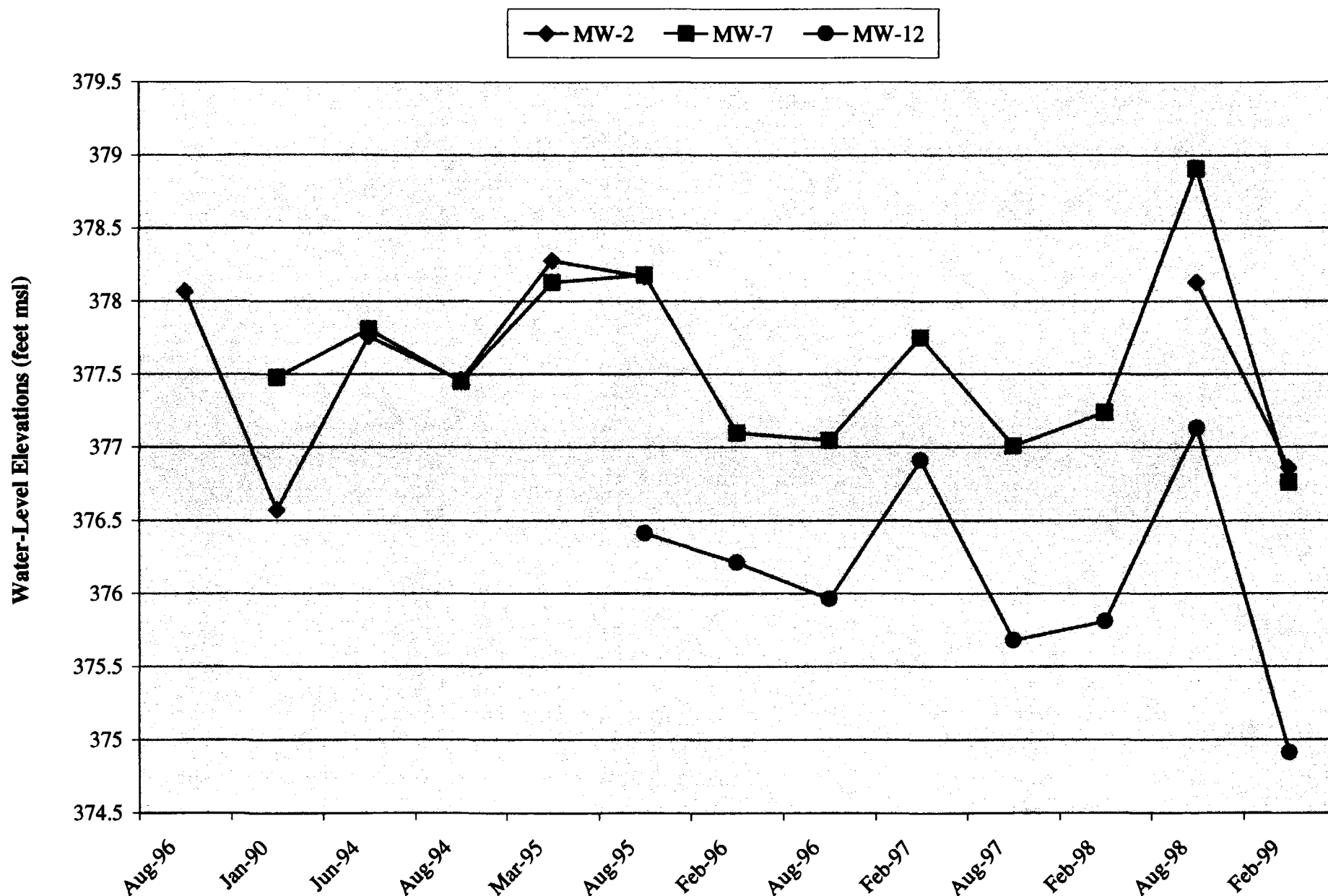
TRW INC.  
1800 Richmond Road  
Cleveland, Ohio 44124

DESIGNED	LAN
DRAWN	H+A
REVIEWED	LAN
CHECKED	MT
SCALE	1"=150 FEET
DATE	08-30-99

THE MONADNOCK COMPANY

**POTENTIOMETRIC SURFACE MAP  
FEBRUARY 1999**

REVISION	
PROJECT	MON.02.99.009
FIGURE	<b>2</b>

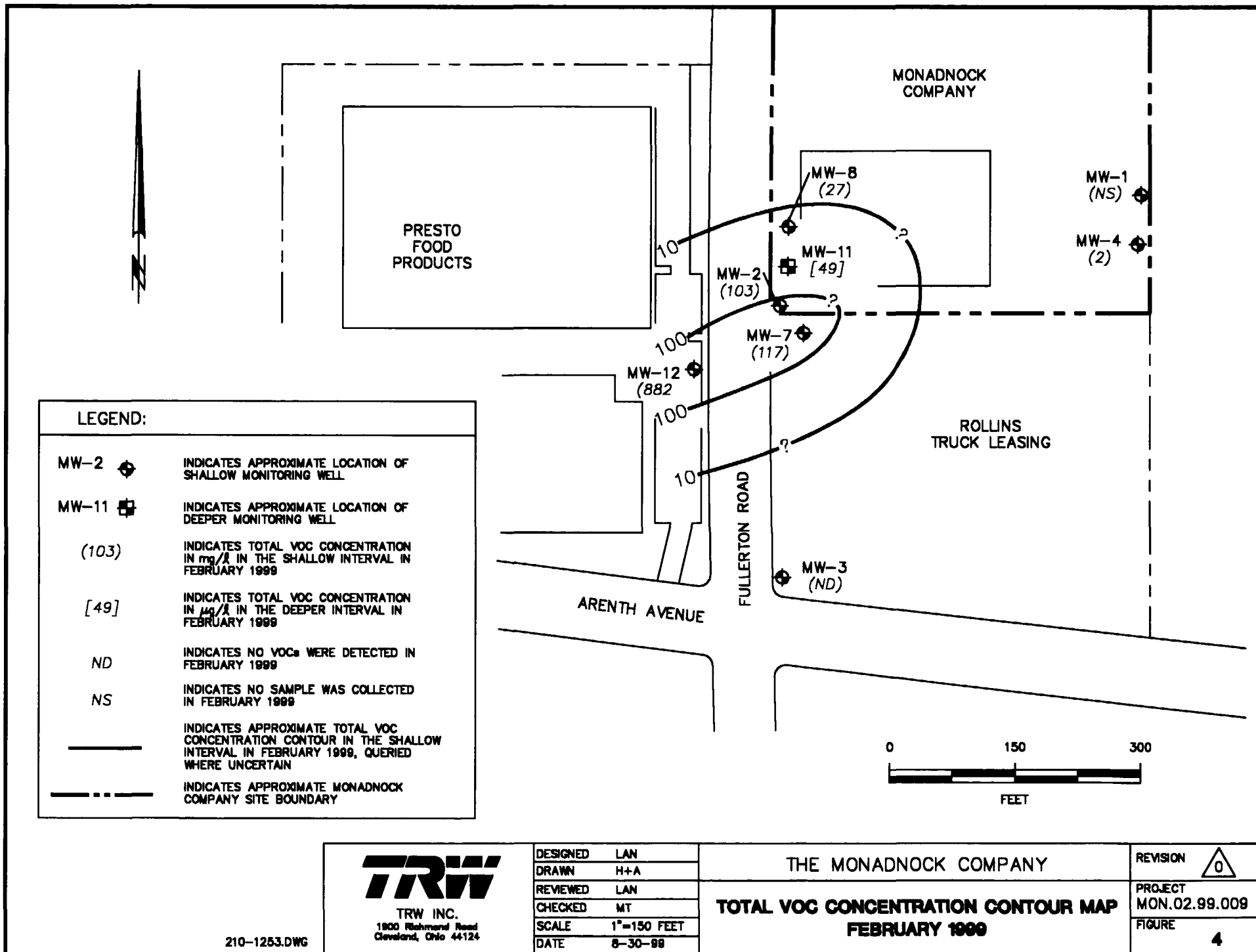


Monadnock Company Site, City of Industry, CA

Project: MON.02.99.009

Water-Level Elevation vs. Time - Wells MW-2, MW-7 and MW-12

FIGURE 3



210-1253.DWG

**TRW**

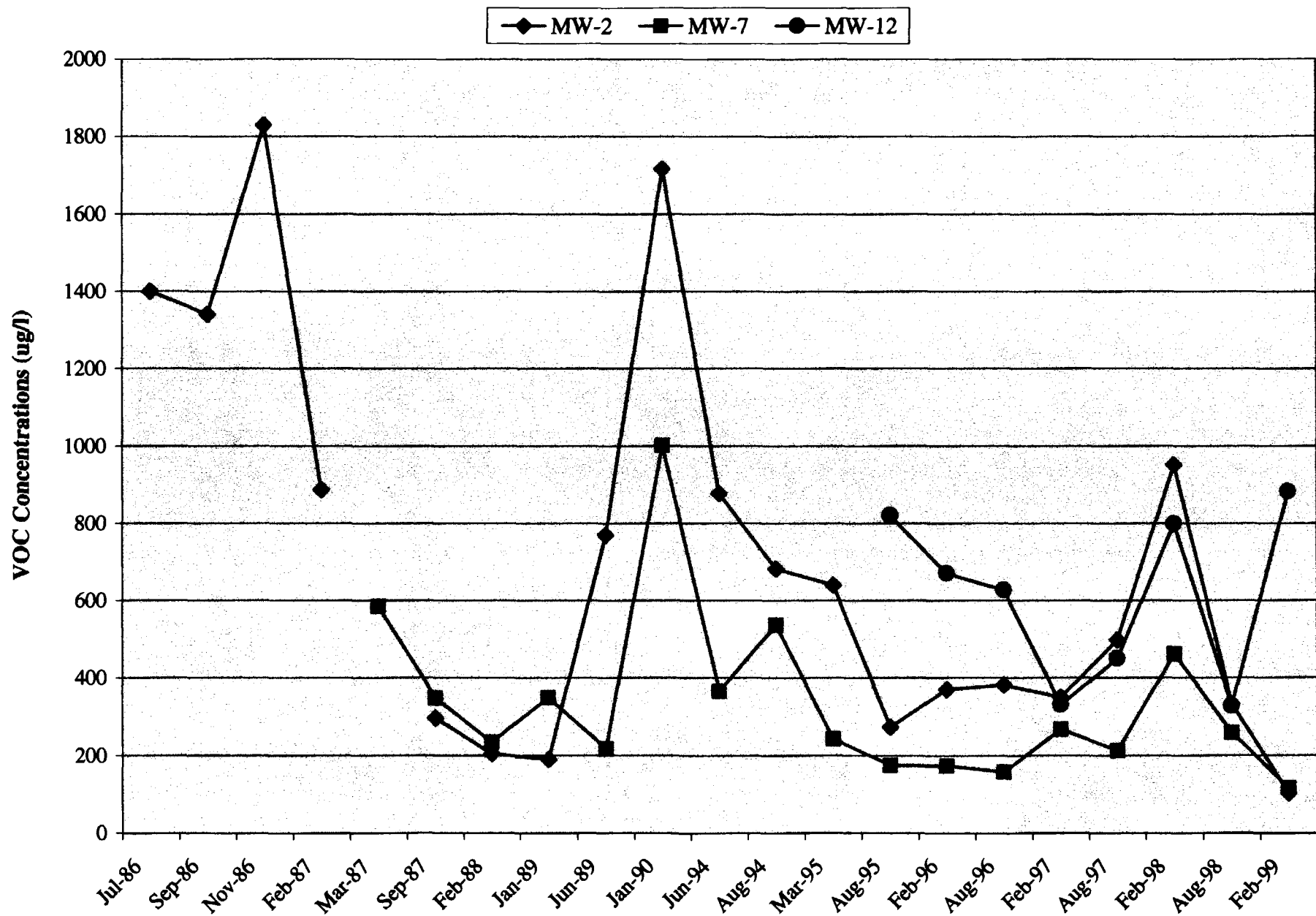
TRW INC.  
1900 Richmond Road  
Cleveland, Ohio 44124

DESIGNED	LAN
DRAWN	H+A
REVIEWED	LAN
CHECKED	MT
SCALE	1"=150 FEET
DATE	8-30-99

THE MONADNOCK COMPANY

**TOTAL VOC CONCENTRATION CONTOUR MAP  
FEBRUARY 1999**

REVISION	
PROJECT	MON.02.99.009
FIGURE	4



Monadnock Company Site, City of Industry, CA

Project: MON.02.99.009

**Total VOC Concentrations vs. Time - Wells MW-2, MW-7 and MW-12**

**FIGURE 5**



## **APPENDIX A**

### **STANDARD FIELD PROCEDURES AND WATER PURGING LOGS**



## **TRW's WELL MONITORING AND SAMPLING FIELD PROCEDURES**

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Prior to purging the wells, static groundwater levels and total well depths are measured in all wells. A clean electronic sounder is used to measure the depth to water below the top of each well casing to the nearest 0.01 foot. Where previous data indicate the presence or likely presence, an interface probe is used to monitor the presence and thickness of light or dense non-aqueous phase liquid (LNAPL/DNAPL).

Each monitoring well is purged a minimum of three well casing volumes prior to sampling. Well purging is accomplished using either dedicated polyethylene bailers, 1.75" or 3.5" diameter PVC bailers, 1.5" disposable HDPE bailers, dedicated bladder pumps, or 2" Grundfos pumps, depending on the characteristics of each well and/or the site. Measurements of pH, specific conductivity, and temperature are recorded at periodic intervals during the purging of all wells. Water-level measurement, well purging, and well sampling data are recorded for each well on water purging logs. Copies of the logs follow these procedures.

Groundwater samples are carefully collected from each well after the water level has recovered to at least 80 percent of the static level. Groundwater samples are collected from the monitoring wells and piezometers using specific well-dedicated Teflon, PVC or polyethylene bailers, or 1.5" disposable HDPE bailers. The dedicated bailers (where used) are suspended in the well from new nylon rope or a monofilament line. Groundwater samples are collected from the sample ports for extraction wells and eductor pipes. Groundwater extraction wells are typically sampled from a dedicated sampling port on the discharge line.

The samples are slowly transferred to new sample containers supplied by the analytical laboratory for each specific analysis. Volatile organic analysis vials are filled in a manner such that no headspace exists. Each sample is logged on a chain-of-custody form that accompanies the samples. The samples are then stored in a clean portable ice chest and cooled with ice until delivery to the analytical laboratory.

Monitoring equipment is decontaminated between use in each well using a non-phosphate detergent wash followed by two deionized water rinses. Wastewater, generated from decontamination activities, is collected in 55-gallon drums. The drummed wastewater is then stored onsite for later disposal or treatment.

Field quality assurance/quality control (QA/QC) procedures are employed during each monitoring event to document that the sampling results meet accepted QA/QC standards. The QA/QC samples collected in the field include blind duplicates, trip blanks, and equipment blanks. Additional QA/QC procedures employed in the field include sequencing the sampling in such a manner that the wells with the lowest levels of contamination are sampled prior to those with the highest levels.

Project: MONADNCK Date: 2-22-99 Collected By: MT & BW

watrlevl.frm

# GROUNDWATER MONITORING WATER PURGING LOG

Project Name: MONADNOCK Date: 2-22-89  
Well No.: MW 2 Location: ONSITE Collected by: MT + BW

Well Purging Method: 3.5" PVC BAILER

Decontamination Method: 1 Wash - 3 Rinses Equipment Deconed Prior to Use: Yes ☒ No ☐

Total Depth (ft.): 44.45 H<sub>2</sub>O Level (ft.): 31.15 Height of Water Column (ft.): 13.30

Casing volumes to be purged: 2" (0.16 gal./ft.) 4" (0.65 gal./ft.) 5" (1.02 gal./ft.) 6" (1.47 gal./ft.)

3 casing vol. x 13.30 gal./ft. x 0.65 ft. = 25.94 gal.

Time	Purged (gallons)	Temp. °F	mΩ	pH	Notes
1410	00				
1418	08	71.9	1448	6.88	H <sub>2</sub> O DIRT BROWN Muddy
1420	09	72.1	1448	6.84	" " " "
1422	11	72.3	1467	6.70	" " " "

- \* Total Purged (gallons): 11.0 No. of Casing Volumes: \_\_\_\_\_
- \* Well Sampling Method: \_\_\_\_\_
- \* Decontamination Method: \_\_\_\_\_

## Calibration Record, Observations, and Notes

- \* Ph Meter Calibration: Zeroed to: \_\_\_\_\_ Spanned to: \_\_\_\_\_
- \* Ambient Temp. \_\_\_\_\_ ° Clear, Sunny, Foggy, Partly Cloudy, Cloudy, Drizzle, Rain, Snow, Wind \_\_\_\_\_
- \* Decon Water Changed Out After This Well: Yes \_\_\_\_\_ No \_\_\_\_\_
- \* Notes: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

# GROUNDWATER MONITORING WATER PURGING LOG

Project Name: MONADNACK Date: 2-22-99  
Well No.: MW-3 Location: OFFSITE - ROLLINS Collected by: MT + BW

Well Purging Method: 3.5" PVC BAKER

Decontamination Method: 1 Wash - 3 Rinses Equipment Deconed Prior to Use: Yes ☒ No ☐

Total Depth (ft.): 45.80 H<sub>2</sub>O Level (ft.): 31.35 Height of Water Column (ft.): 14.45

Casing volumes to be purged: 2" (0.16 gal./ft.) 4" (0.65 gal./ft.) 5" (1.02 gal./ft.) 6" (1.47 gal./ft.)

3 casing vol. x 14.45 gal./ft. x 0.65 ft. = 28.47 gal.

Time	Purged (gallons)	Temp. °F	mΩ	pH	Notes
1055	00				
1100	05	72.6	1585	6.93	H <sub>2</sub> O Slightly Cloudy
1105	10	72.7	1594	6.89	H <sub>2</sub> O Cloudy Brown
1110	16	72.7	1601	6.98	" " "
* —	—	—	—	—	Well Paused by C. 16.0 Gal.

\* Total Purged (gallons): 16.0 No. of Casing Volumes: \_\_\_\_\_

\* Well Sampling Method: \_\_\_\_\_

\* Decontamination Method: \_\_\_\_\_

## Calibration Record, Observations, and Notes

\* Ph Meter Calibration: Zeroed to: \_\_\_\_\_ Spanned to: \_\_\_\_\_

\* Ambient Temp. \_\_\_\_\_ ° Clear, Sunny, Foggy, Partly Cloudy, Cloudy, Drizzle, Rain, Snow, Wind \_\_\_\_\_

\* Decon Water Changed Out After This Well: Yes \_\_\_\_\_ No \_\_\_\_\_

\* Notes: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

# GROUNDWATER MONITORING WATER PURGING LOG

Project Name: MONADNUCK Date: 2-22-99  
Well No.: MLW-4 Location: ONSITE Collected by: MT+BW

Well Purging Method: 3.5" PVC BAILER

Decontamination Method: 1 Wash - 3 Rinses Equipment Decon'd Prior to Use: Yes ☒ No ☐

Total Depth (ft.): 48.80 H<sub>2</sub>O Level (ft.): 33.35 Height of Water Column (ft.): 15.45

Casing volumes to be purged: 2" (0.16 gal./ft.) 4" (0.65 gal./ft.) 5" (1.02 gal./ft.) 6" (1.47 gal./ft.)  
3 casing vol. x 15.45 gal./ft. x 0.65 ft. = 30.13 gal.

Time	Purged (gallons)	Temp. °F	mΩ	pH	Notes
1125	00				
1130	10	73.7	1520	6.90	H <sub>2</sub> O Cloudy Brown
1138	20	74.4	1558	6.87	H <sub>2</sub> O Cloudy Light Brown
1145	31	74.6	1564	7.03	" " " "

- \* Total Purged (gallons): 31.0 No. of Casing Volumes: 3
- \* Well Sampling Method: \_\_\_\_\_
- \* Decontamination Method: \_\_\_\_\_

## Calibration Record, Observations, and Notes

- \* Ph Meter Calibration: Zeroed to: \_\_\_\_\_ Spanned to: \_\_\_\_\_
- \* Ambient Temp. \_\_\_\_\_ ° Clear, Sunny, Foggy, Partly Cloudy, Cloudy, Drizzle, Rain, Snow, Wind \_\_\_\_\_
- \* Decon Water Changed Out After This Well: Yes \_\_\_\_\_ No \_\_\_\_\_
- \* Notes: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

# GROUNDWATER MONITORING WATER PURGING LOG

Project Name: MONADNOCK Date: 2-23-99  
Well No.: MIN-7 Location: OFFSITE - ROLLINS Collected by: MT & RW

Well Purging Method: 3.5" PVC BAILER  
Decontamination Method: 1 Wash - 3 Rinses Equipment Deconed Prior to Use: Yes ☒ No ☐  
Total Depth (ft.): 56.50 H<sub>2</sub>O Level (ft.): 32.40 Height of Water Column (ft.): 24.10  
Casing volumes to be purged: 2" (0.16 gal./ft.) 4" (0.65 gal./ft.) 5" (1.02 gal./ft.) 6" (1.47 gal./ft.)  
3 casing vol. x 24.10 gal./ft. x 0.65 ft. = 46.99 gal.

Time	Purged (gallons)	Temp. °F	mΩ	pH	Notes
0800	00				
0815	15	68.1	1486	7.19	H <sub>2</sub> O CLOUDY LIGHT BROWN
0822	30	68.0	1418	7.16	" " " "
0830	47	68.6	1397	7.18	" " " "

\* Total Purged (gallons): 47.0 No. of Casing Volumes: 3  
\* Well Sampling Method: \_\_\_\_\_  
\* Decontamination Method: \_\_\_\_\_

## Calibration Record, Observations, and Notes

\* Ph Meter Calibration: Zeroed to: 7.0 Spanned to: 10.0  
\* Ambient Temp. 61 ° Clear, Sunny, Foggy, Partly Cloudy, Cloudy, Drizzle, Rain, Snow, Wind \_\_\_\_\_  
\* Decon Water Changed Out After This Well: Yes ☒ No ☐  
\* Notes: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

# GROUNDWATER MONITORING WATER PURGING LOG

Project Name: MONADNOCK Date: 2-22-99  
Well No.: MW-8 Location: ON SITE Collected by: BT+MLW

Well Purging Method: 3.5" PVC BAILER

Decontamination Method: 1 Wash - 3 Rinses Equipment Deconed Prior to Use: Yes ☒ No ☐

Total Depth (ft.): 51.20 H<sub>2</sub>O Level (ft.): 32.20 Height of Water Column (ft.): 19.00

Casing volumes to be purged: 2" (0.16 gal./ft.) 4" (0.65 gal./ft.) 5" (1.02 gal./ft.) 6" (1.47 gal./ft.)

3 casing vol. x 19.00 gal./ft. x 0.65 ft. = 37.05 gal.

Time	Purged (gallons)	Temp. °F	mΩ	pH	Notes
1155	00				
1205	15	76.8	1489	6.98	H <sub>2</sub> O Cloudy Brown
1210	25	76.8	1490	6.98	H <sub>2</sub> O Cloudy light Brown
1212	30	76.3	1471	7.07	H <sub>2</sub> O Cloudy Brown
1218	38	75.5	1468	7.02	" " "

\* Total Purged (gallons): 38.0 No. of Casing Volumes: 3

\* Well Sampling Method: \_\_\_\_\_

\* Decontamination Method: \_\_\_\_\_

## Calibration Record, Observations, and Notes

\* Ph Meter Calibration: Zeroed to: \_\_\_\_\_ Spanned to: \_\_\_\_\_

\* Ambient Temp. \_\_\_\_\_ ° Clear, Sunny, Foggy, Partly Cloudy, Cloudy, Drizzle, Rain, Snow, Wind \_\_\_\_\_

\* Decon Water Changed Out After This Well: Yes \_\_\_\_\_ No \_\_\_\_\_

\* Notes: \_\_\_\_\_

# GROUNDWATER MONITORING WATER PURGING LOG

Project Name: MONADNOCK Date: 2-22-99  
Well No.: MW-11 Location: ONSITE Collected by: MT + BW

Well Purging Method: 3.5" PVC BAILER

Decontamination Method: 1 Wash - 3 Rinses Equipment Deconed Prior to Use: Yes ☒ No ☐

Total Depth (ft.): 96.60 H<sub>2</sub>O Level (ft.): 32.95 Height of Water Column (ft.): 63.65

Casing volumes to be purged: 2" (0.16 gal./ft.) 4" (0.65 gal./ft.) 5" (1.02 gal./ft.) 6" (1.47 gal./ft.)

3 casing vol. x 63.65 gal./ft. x 0.65 ft. = 124.11 gal.

Time	Purged (gallons)	Temp. °F	mΩ	pH	Notes
1305	00				
1320	30	73.8	1224	7.07	H <sub>2</sub> O Cloudy LIGHT BROWN
1333	60	71.5	1244	7.02	" " " "
1343	90	71.1	1241	6.94	" " " "
1400	125	71.0	1233	6.96	" " " "

\* Total Purged (gallons): 125.0 No. of Casing Volumes: 3

\* Well Sampling Method: \_\_\_\_\_

\* Decontamination Method: \_\_\_\_\_

## Calibration Record, Observations, and Notes

\* Ph Meter Calibration: Zeroed to: \_\_\_\_\_ Spanned to: \_\_\_\_\_

\* Ambient Temp. \_\_\_\_\_ ° Clear, Sunny, Foggy, Partly Cloudy, Cloudy, Drizzle, Rain, Snow, Wind \_\_\_\_\_

\* Decon Water Changed Out After This Well: Yes \_\_\_\_\_ No \_\_\_\_\_

\* Notes: \_\_\_\_\_



# GROUNDWATER MONITORING WATER PURGING LOG

Project Name: MONADNOCK Date: 2-22-99  
Well No.: MW-12 Location: OFFSITE - PRESTO Collected by: MT & BW

Well Purging Method: 3.5" PVC BAILER  
Decontamination Method: 1 Wash - 3 Rinses Equipment Deconed Prior to Use: Yes ☒ No ☐  
Total Depth (ft.): 49.45 H<sub>2</sub>O Level (ft.): 32.00 Height of Water Column (ft.): 17.45  
Casing volumes to be purged: 2" (0.16 gal./ft.) 4" (0.65 gal./ft.) 5" (1.02 gal./ft.) 6" (1.47 gal./ft.)  
3 casing vol. x 52.35 gal./ft. x 0.65 ft. = 34.03 gal.

Time	Purged (gallons)	Temp. °F	mΩ	pH	Notes
0925	00				
0935	10	68.8	1262	7.24	H <sub>2</sub> O Sunny Cloudy
0941	20	68.8	1298	7.26	H <sub>2</sub> O Cloudy BROWN
0950	35	68.4	1360	7.28	" " "

\* Total Purged (gallons): 35.0 No. of Casing Volumes: 3  
\* Well Sampling Method: \_\_\_\_\_  
\* Decontamination Method: \_\_\_\_\_

## Calibration Record, Observations, and Notes

\* Ph Meter Calibration: Zeroed to: 7.0 Spanned to: 10.0  
\* Ambient Temp. 63 ° Clear Sunny Foggy, Partly Cloudy, Cloudy, Drizzle, Rain, Snow, Wind 0  
\* Decon Water Changed Out After This Well: Yes ☒ No ☐  
\* Notes: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

# GROUNDWATER MONITORING ANALYTICAL QC LOG

Project: MONADNOCK Date: 2-22-99 Collected By: MT & BW

Sample Number	Well Number	Time	QC Sample	
M0022299-1	MW-12	1000	+	VOA
M0022299-2	MW-12	1000	+	METALS
M0022299-3	MW-12	1000	+	CYANIDE
M0022299-4	MW-12	1020	DUPLICATE	VOA
M0022299-5	MW-12	1020	DUPLICATE	METALS
M0022299-6	MW-12	1020	DUPLICATE	CYANIDE
2-23-99 M0022399-7	MW-7	0845	+	VOA
M0022399-8	MW-7	0845	+	METALS
M0022399-9	MW-7	0845	+	CYANIDE
M0022399-10	MW-3	0910	+	VOA
M0022399-11	MW-3	0910	+	METALS
M0022399-12	MW-3	0910	+	CYANIDE
M0022399-13	MW-3	0910	MS/MSD	VOA
M0022399-14	MW-4	0945	+	VOA
M0022399-15	MW-4	0945	+	METALS
M0022399-16	MW-4	0945	+	CYANIDE
M0022399-17	MW-8	1010	+	VOA
M0022399-18	MW-8	1010	+	METALS
M0022399-19	MW-8	1010	+	CYANIDE
M0022399-20	MW-8	1015	EQUIP BLANK	VOA
M0022399-21	MW-11	1035	+	VOA
M0022399-22	MW-11	1035	+	METALS
M0022399-23	MW-11	1035	+	CYANIDE
M0022399-24	MW-2	1110	+	VOA
M0022399-25	MW-2	1110	+	METALS

Decon Water changed out after well number: MW-8 + MW-7

Observations/Notes: \_\_\_\_\_



## **APPENDIX B**

### **ANALYTICAL LABORATORY REPORTS AND CHAIN-OF-CUSTODY FORMS**



# Centrum Analytical Laboratories, Inc.

CERTIFIED HAZARDOUS WASTE TESTING LABORATORY • CHEMICAL AND BIOLOGICAL ANALYSES

Client: Orion Environmental  
3450 E. Spring Ste. 212  
Long Beach, CA 90806

Date Sampled: 02/22/99  
Date Received: 02/24/99  
Job Number: 14485

Project: Manadnock - GW

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## CASE NARRATIVE

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The following information applies to samples which were received on 02/24/99 :

The samples were received at the laboratory chilled and sample containers were intact.

The Cadmium, Chromium, and Cyanide analyses were subcontracted to ELAP Lab #1230. The original report is attached to, but is not part of, this report.

Unless otherwise noted below, the Quality Control acceptance criteria were met for all samples for every analysis requested.

Report approved by:

Robert R. Clark, Ph.D.  
Laboratory Director

ELAP # 1184

DL : Detection Limit -- The lowest level at which the compound can reliably be detected under normal laboratory conditions.  
ND : Not Detected -- The compound was analyzed for but was not found to be present at or above the detection limit.  
NA : Not Analyzed -- Per client request, this analyte was not on the list of compounds to be analyzed for.

**EPA 8010 Compounds (Volatile Halocarbons) by GC/MS**

Client: Orion Environmental  
 Project: Manadnock - GW  
 Job No.: 14485  
 Matrix: Water  
 Analyst: RRC

Date Sampled: 02/22/99  
 Date Received: 02/24/99  
 Date Analyzed: 03/03-04/99  
 Batch Number: 8260W1584  
 Method Number: 8260

MW-12 MW-12Dup MW-7 MW-3 MS/MSD

		M0022299	M0022299	M0022399	M0022399	M0022399	
	Sample ID:	Blank	-1	-4	-7	-10	-13
Compounds	DL	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Bromobenzene	1.0	ND	ND	ND	ND	ND	ND
Bromodichloromethane	0.5	ND	ND	ND	ND	ND	ND
Bromoform	0.5	ND	ND	ND	ND	ND	ND
Bromomethane	0.5	ND	ND	ND	ND	ND	ND
Carbon tetrachloride	0.5	ND	ND	ND	ND	ND	ND
Chlorobenzene	0.5	ND	ND	ND	ND	ND	ND
Chloroethane	0.5	ND	ND	ND	ND	ND	ND
Chloroform	0.5	ND	2.2	2.1	ND	ND	ND
Chloromethane	0.5	ND	ND	ND	ND	ND	ND
Dibromochloromethane	0.5	ND	ND	ND	ND	ND	ND
Dibromomethane	0.5	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	1.0	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	0.5	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	0.5	ND	ND	ND	ND	ND	ND
Dichlorodifluoromethane	0.5	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	0.5	ND	3.9	3.6	0.6	ND	ND
1,2-Dichloroethane	1.0	ND	2.7	2.8	ND	ND	ND
1,1-Dichloroethene	0.5	ND	300	260	24	ND	ND
cis-1,2-Dichloroethene	0.5	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	0.5	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	0.5	ND	ND	ND	ND	ND	ND
1,3-Dichloropropane	0.5	ND	ND	ND	ND	ND	ND
2,2-Dichloropropane	0.5	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	0.5	ND	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene	1.0	ND	ND	ND	ND	ND	ND
Methylene chloride	10	ND	ND	ND	ND	ND	ND
1,1,1,2-Tetrachloroethane	0.5	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	1.0	ND	ND	ND	ND	ND	ND
Tetrachloroethene	0.5	ND	47	48	9.0	ND	ND
1,1,1-Trichloroethane	0.5	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	0.5	ND	6.4	6.8	1.1	ND	ND
Trichloroethene	0.5	ND	520	460	82	ND	ND
1,2,3-Trichloropropane	0.5	ND	ND	ND	ND	ND	ND
Vinyl chloride	1.0	ND	ND	ND	ND	ND	ND

**EPA 8010 Compounds (Volatile Halocarbons) by GC/MS**

Client: Orion Environmental  
Project: Manadnock - GW  
Job No.: 14485  
Matrix: Water  
Analyst: RRC

Date Sampled: 02/22/99  
Date Received: 02/24/99  
Date Analyzed: 03/03-04/99  
Batch Number: 8260W1584  
Method Number: 8260

Surrogates (% recovery)		Limits: 80 - 130	MW-12	MW-12 Dup	MW-7	MW-3	MS/MSD
			M0022299	M0022299	M0022399	M0022399	M0022399
Sample ID:	Blank	-1	-4	-7	-10	-13	
Dibromofluoromethane	101	103	109	104	105	101	
Toluene-d8	101	102	107	99	104	98	
Bromofluorobenzene	99	103	105	104	100	97	

**EPA 8010 Compounds (Volatile Halocarbons) by GC/MS**

Client: Orion Environmental  
 Project: Manadnock - GW  
 Job No.: 14485  
 Matrix: Water  
 Analyst: RRC

Date Sampled: 02/22/99  
 Date Received: 02/24/99  
 Date Analyzed: 03/03-04/99  
 Batch Number: 8260W1584  
 Method Number: 8260

		MW-4	MW-8	Equip. Blk.	MW-11	MW-2
		M0022399	M0022399	M0022399	M0022399	M0022399
Sample ID:		-14	-17	-20	-21	-24
Compounds	DL	µg/L	µg/L	µg/L	µg/L	µg/L
Bromobenzene	1.0	ND	ND	ND	ND	ND
Bromodichloromethane	0.5	ND	ND	ND	ND	ND
Bromoform	0.5	ND	ND	ND	ND	ND
Bromomethane	0.5	ND	ND	ND	ND	ND
Carbon tetrachloride	0.5	ND	ND	ND	ND	ND
Chlorobenzene	0.5	ND	ND	ND	ND	ND
Chloroethane	0.5	ND	ND	ND	ND	ND
Chloroform	0.5	ND	ND	ND	ND	ND
Chloromethane	0.5	ND	ND	ND	ND	ND
Dibromochloromethane	0.5	ND	ND	ND	ND	ND
Dibromomethane	0.5	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	1.0	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	0.5	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	0.5	ND	ND	ND	ND	ND
Dichlorodifluoromethane	0.5	1.8	0.6	ND	ND	ND
1,1-Dichloroethane	0.5	ND	0.6	ND	ND	0.7
1,2-Dichloroethane	1.0	ND	ND	ND	ND	ND
1,1-Dichloroethene	0.5	ND	6.2	ND	8.3	26
cis-1,2-Dichloroethene	0.5	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	0.5	ND	ND	ND	ND	ND
1,2-Dichloropropane	0.5	ND	ND	ND	ND	ND
1,3-Dichloropropane	0.5	ND	ND	ND	ND	ND
2,2-Dichloropropane	0.5	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	0.5	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene	1.0	ND	ND	ND	ND	ND
Methylene chloride	10	ND	ND	ND	ND	ND
1,1,1,2-Tetrachloroethane	0.5	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	1.0	ND	ND	ND	ND	ND
Tetrachloroethene	0.5	0.6	4.7	ND	3.0	14
1,1,1-Trichloroethane	0.5	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	0.5	ND	ND	ND	ND	1.2
Trichloroethene	0.5	ND	15	ND	38	61
1,2,3-Trichloropropane	0.5	ND	ND	ND	ND	ND
Vinyl chloride	1.0	ND	ND	ND	ND	ND

## EPA 8010 Compounds (Volatile Halocarbons) by GC/MS

Client: Orion Environmental  
Project: Manadnock - GW  
Job No.: 14485  
Matrix: Water  
Analyst: RRC

Date Sampled: 02/22/99  
Date Received: 02/24/99  
Date Analyzed: 03/03-04/99  
Batch Number: 8260W1584  
Method Number: 8260

		MW-4				
Surrogates (% recovery)		Limits: 80 - 130	MW-8	Equip. Blk.	MW-11	MW-2
		M0022399	M0022399	M0022399	M0022399	M0022399
Sample ID:		-14	-17	-20	-21	-24
Dibromofluoromethane		105	104	106	107	110
Toluene-d8		101	101	98	104	104
Bromofluorobenzene		99	99	96	100	100



## QC Sample Report - EPA Method 8260

Matrix: Water  
Batch #: 8260W1584

### Batch Accuracy Results

Sample ID: Laboratory Control Sample

Analytical Notes:

Analyte	Spike Concentration µg/L	% Recovery LCS	Acceptance Limits % Recovery	Pass/Fail
1,1-Dichloroethene	20.0	108	59 - 172	Pass
Benzene	20.0	111	66 - 142	Pass
Trichloroethene	20.0	111	71 - 137	Pass
Toluene	20.0	103	59 - 139	Pass
Chlorobenzene	20.0	97	60 - 133	Pass

### Batch Precision Results

MS/MSD Sample ID: M002299-13

Analytical Notes:

Analyte	Spike Sample Recovery µg/L	Spike Duplicate Recovery µg/L	Relative Percent Difference (RPD)	Upper Control Limit RPD	Pass/Fail
1,1-Dichloroethene	22.1	19.6	12%	22%	Pass
Benzene	23.5	22.2	6%	21%	Pass
Trichloroethene	22.7	20.7	9%	24%	Pass
Toluene	22.8	21.0	8%	21%	Pass
Chlorobenzene	20.2	19.3	5%	21%	Pass

MS: Matrix Spike Sample  
MSD: Matrix Spike Duplicate

**Calscience**  
**Environmental**  
**Laboratories, Inc.**

March 04, 1999

Marilu Escher  
Centrum Analytical Laboratories, Inc.  
290 Tennessee Street  
Redlands, CA 92373

Subject: **Calscience Work Order No.: 99-02-0719**  
Client Reference: **Manadnock-GW/14485**

Dear Client:

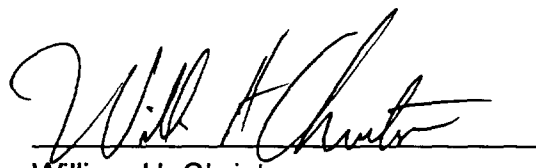
Enclosed is an analytical report for the above-referenced project. The samples included in this report were received 02/25/99 and analyzed in accordance with the attached chain-of-custody.

The results in this analytical report are limited to the samples tested and any reproduction of this report must be made in its entirety.

If you have any questions regarding this report, require sampling supplies or field services, or information on our analytical services, please feel free to call me at (714) 895-5494.

Sincerely,

  
Calscience Environmental  
Laboratories, Inc.  
Larry Lem  
Project Manager

  
William H. Christensen  
Quality Assurance Manager

Centrum Analytical Laboratories, Inc  
290 Tennessee Street  
Redland, CA 92373

Date Sampled: 02/22-23/99  
Date Received: 02/25/99  
Date Analyzed: 02/26/99

Attn: Marilu Escher  
RE: Manadnock-GW/14485

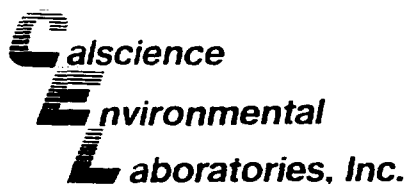
Work Order No.: 99-02-0719  
Method: EPA 335.2  
Page 1 of 1

All concentrations are reported in mg/L (ppm).

<u>Sample Number</u>	<u>Cyanide, Total Concentration</u>	<u>Reporting Limit</u>
M0022299-3 MW-12	0.19	0.05
M0022299-6 MW-12Dup	0.07	0.05
M0022399-9 MW-7	ND	0.05
M0022399-12 MW-3	ND	0.05
M0022399-16 MW-4	ND	0.05
M0022399-19 MW-8	ND	0.05
M0022399-23 MW-11	ND	0.05
M0022399-26 MW-2	0.18	0.05
Method Blank	ND	0.05

ND denotes not detected at indicated reportable limit.

Each sample was received by CEL chilled, intact, and with chain-of-custody attached.



## ANALYTICAL REPORT

Centrum Analytical Laboratories, Inc.  
290 Tennessee Street  
Redlands, CA 92373

Date Received: 02/25/99  
Work Order No: 99-02-0719  
Preparation: Total Digestion  
Method: EPA 6010B

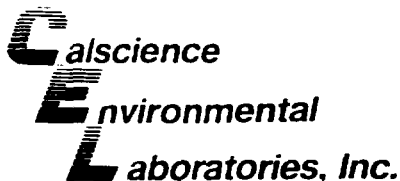
Project: Manadnock-GW/14485

Page 1 of 2

Client Sample Number:			Lab Sample Number:			Date Collected:	Matrix:	Date Prepared:	Date Analyzed:	QC Batch ID:		
M0022299-2 MW-12			99-02-0719-1			02/22/99	Aqueous	02/25/99	02/26/99	9902251cs1		
Parameter	Result	RL	DF	Qual	Units	Parameter		Result	RL	DF	Qual	Units
Cadmium	ND	0.005	1		mg/L	Chromium (Total)		0.804	0.005	1		mg/L
M0022299-5 MW-12Dup			99-02-0719-3			02/22/99	Aqueous	02/25/99	02/26/99	9902251cs1		
Parameter	Result	RL	DF	Qual	Units	Parameter		Result	RL	DF	Qual	Units
Cadmium	ND	0.005	1		mg/L	Chromium (Total)		0.996	0.005	1		mg/L
M0022299-8 MW-7			99-02-0719-5			02/22/99	Aqueous	02/25/99	02/26/99	9902251cs1		
Parameter	Result	RL	DF	Qual	Units	Parameter		Result	RL	DF	Qual	Units
Cadmium	ND	0.005	1		mg/L	Chromium (Total)		0.046	0.005	1		mg/L
M0022299-11 MW-3			99-02-0719-7			02/22/99	Aqueous	02/25/99	02/26/99	9902251cs1		
Parameter	Result	RL	DF	Qual	Units	Parameter		Result	RL	DF	Qual	Units
Cadmium	ND	0.005	1		mg/L	Chromium (Total)		ND	0.005	1		mg/L
M0022299-15 MW-4			99-02-0719-9			02/22/99	Aqueous	02/25/99	02/26/99	9902251cs1		
Parameter	Result	RL	DF	Qual	Units	Parameter		Result	RL	DF	Qual	Units
Cadmium	ND	0.005	1		mg/L	Chromium (Total)		0.038	0.005	1		mg/L
M0022299-18 MW-8			99-02-0719-11			02/23/99	Aqueous	02/25/99	02/26/99	9902251cs1		
Parameter	Result	RL	DF	Qual	Units	Parameter		Result	RL	DF	Qual	Units
Cadmium	ND	0.005	1		mg/L	Chromium (Total)		0.005	0.005	1		mg/L
M0022299-22 MW-11			99-02-0719-13			02/23/99	Aqueous	02/25/99	02/26/99	9902251cs1		
Parameter	Result	RL	DF	Qual	Units	Parameter		Result	RL	DF	Qual	Units
Cadmium	ND	0.005	1		mg/L	Chromium (Total)		ND	0.005	1		mg/L

RL - Reporting Limit      DF - Dilution Factor      Qual - Qualifiers

7440 Lincoln Way, Garden Grove, CA 92841-1432 • TEL: (714) 895-5494 • FAX: (714) 894-7501



## ANALYTICAL REPORT

Centrum Analytical Laboratories, Inc.  
290 Tennessee Street  
Redlands, CA 92373

Date Received: 02/25/99  
Work Order No: 99-02-0719  
Preparation: Total Digestion  
Method: EPA 6010B

Project: Manadnock-GW/14485

Page 2 of 2

Client Sample Number:	Lab Sample Number:	Date Collected:	Matrix:	Date Prepared:	Date Analyzed:	QC Batch ID:
M0022299-25 MW-2	99-02-0719-15	02/23/99	Aqueous	02/25/99	02/26/99	990225lcs1

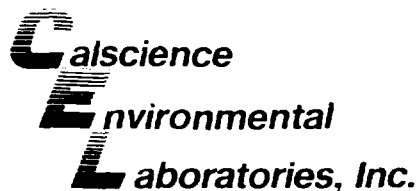
Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Cadmium	ND	0.005	1		mg/L	Chromium (Total)	0.076	0.005	1		mg/L

Method Blank	097-01-003-743	N/A	Aqueous	02/25/99	02/26/99	990225lcs1
--------------	----------------	-----	---------	----------	----------	------------

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Cadmium	ND	0.005	1		mg/L	Chromium (Total)	ND	0.005	1		mg/L

RL - Reporting Limit      DF - Dilution Factor      Qual - Qualifiers

7440 Lincoln Way, Garden Grove, CA 92841-1432 • TEL: (714) 895-5494 • FAX: (714) 894-7501



**Quality Control - Spike/Spike Duplicate**  
EPA 6010B ICP Metals, TTLC

MS/MSD Batch Number: 022599ms1  
Matrix: Aqueous  
Method: EPA 6010B

Instrument: ICP 2000  
Date Extracted: 02/25/99  
Date Analyzed: 02/26/99

**Spiked Sample ID: 99-02-0718-1**

<u>Parameter</u>	<u>MS %REC</u>	<u>MSD %REC</u>	<u>%REC CL</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
Cadmium	88	85	80-120	4	0-20	
Chromium (Total)	88	87	80-120	1	0-20	

A handwritten signature in black ink, appearing to be 'M. J. ...', is located at the bottom left of the page.

**Calscience**

**Environmental**

**Laboratories, Inc.**

**Quality Control - Laboratory Control Sample**

EPA 6010B ICP Metals, TTLC

LCS Batch Number: 990225lcs1

Lab File ID: 990225-L

Matrix: Aqueous

Method: EPA 6010B

Instrument: ICP 2000

Date Analyzed: 02/26/99

**LCS Sample Number: 097-01-003-743**

<u>Parameter</u>	<u>Conc Added</u>	<u>Conc Recovered</u>	<u>%Rec</u>	<u>%Rec CL</u>	<u>Qualifiers</u>
Cadmium	1.00	0.982	98	80-120	
Chromium (Total)	1.00	0.944	94	80-120	

## GLOSSARY OF TERMS AND QUALIFIERS

Work Order Number: 99-02-0719

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<u>Qualifier</u>	<u>Definition</u>
ND	Not detected at indicated reporting limit.





# Centrum Analytical Laboratories, Inc.

290 TENNESSEE STREET  
REDLANDS, CA 92373

(909) 798-9336 • (800) 798-9336  
FAX (909) 793-1559

## Chain of Custody Record

Centrum Job #

14485

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Project No.: <u>MONADNOCK-GW</u>		Project Name: <u>MONADNOCK-GW</u>		Analyses Requested												Turn-around time							
Project Manager: <u>JEFF GWINN</u>		Phone: <u>562/988-2755</u>		Fax: <u>562/988-2759</u>														<input type="checkbox"/> 24 Hr. RUSH* <input type="checkbox"/> 48 Hr. RUSH* <input checked="" type="checkbox"/> Normal TAT <small>* Requires prior approval, additional charges apply</small>					
Client Name: <u>TRW</u>		Address: <u>3450 E. SPRING ST, STE 212</u>		City: <u>LONG BEACH, CA</u>														Remarks/ Special Instructions					
Centrum ID (Lab use only)	Sample ID (As it should appear on report)	Date sampled	Time sampled	Sample matrix	Site location	Containers: # and type	GC/MS: 8260 8240 8010 824.2	8080: Pesticides PCBs Pest/PCB	8015M: Diesel Fuel Screen	8015M: Gasoline 8020 Gas/BTEX	418.1 (TRPH)	Semivolatiles: 8270 625	Metals: <u>JL/CIGAM</u> PP <u>ROB</u> <u>CHAD</u> <u>ONLY</u>	Lead Only	pH TDS TSS Conductivity COD	Flashpoint Fluoride Hex Chrome	CYANIDE 335.2/9010						
1	M0022399-1	2-22-99	1000	H2O	MONADNOCK	3-VOA	X																
2	M0022399-2					1- <sup>SM</sup> 204							X					TOTAL CADMIUM + CHROMIUM ONLY					
3	M0022399-3					1- <sup>LG</sup> 204										X							
4	M0022399-4		1020			3-VOA	X																
5	M0022399-5					1- <sup>SM</sup> 204							X					TOTAL CADMIUM + CHROMIUM ONLY					
6	M0022399-6					1- <sup>LG</sup> 204										X							
7	M0022399-7	2-23-99	0845			3-VOA	X																
8	M0022399-8					1- <sup>SM</sup> 204							X					TOTAL CADMIUM + CHROMIUM ONLY					
9	M0022399-9					1- <sup>LG</sup> 204										X							
10	M0022399-10		0910			3-VOA	X																
Relinquished by: (Sampler's Signature) <u>[Signature]</u>		Date	Time	Relinquished by: <u>[Signature]</u>		Date	Time	To be completed by laboratory personnel:										Sample Disposal					
Received by: <u>[Signature]</u>		Date	Time	Received by: <u>[Signature]</u>		Date	Time	Samples chilled? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Custody seals? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No All sample containers intact? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Carrier <input type="checkbox"/> UPS/Fed Ex <input type="checkbox"/> Hand carried										<input type="checkbox"/> Client will pick up <input type="checkbox"/> Return to client <input type="checkbox"/> Lab disposal fee \$5					
The delivery of samples and the signature on this chain of custody form constitutes authorization to perform the analyses specified above under the Terms and Conditions set forth on the back hereof.								Relinquished by: <u>[Signature]</u>		Date	Time												
								Received for Laboratory by: <u>[Signature]</u>		Date	Time												
Laboratory Notes: <u>SEND REPORT TO: MO TABAN 3922 EMERALD ST, #24 TORRANCE, CA 90503</u>																		Sample Locator No.					



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## Chain of Custody Record

Centrum Job #

14485

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### Analyses Requested

Project No.: <u>MCNADNOCK - GW</u>			Project Name: <u>MCNADNOCK - GW</u>			GC/MS: 8250 8240 8010 524.2		8080: Pesticides PCBs Pest/PCB		8015M: Diesel Fuel Screen		8015M: Gasoline 8020 Gas/BTEX		418.1 (TRPH)		Semivolatiles: 8270 625		Metals: TLIC (CAM) PP RCRA TOXIC CHROMIUM		Lead Only		pH TDS TSS Conductivity COD		Flashpoint Fluoride Hex Chrome		CYANIDE 335.2/4010		Turn-around time <input type="checkbox"/> 24 Hr. RUSH* <input type="checkbox"/> 48 Hr. RUSH* <input checked="" type="checkbox"/> Normal TAT <small>* Requires prior approval, additional charges apply</small>	
Project Manager: <u>JEFF GWINN</u>			Phone: <u>(562) 988-2155</u>			Fax: <u>(562) 988-2759</u>																							
Client Name: <u>TRW</u>			Address: <u>3450 E. SPRING ST. Suite 212 Lakewood, CA</u>																										
Centrum ID (Lab use only)	Sample ID (As it should appear on report)	Date sampled	Time sampled	Sample matrix	Site location	Containers: # and type																				Remarks/ Special Instructions			
11	MCC22399-11	2-23-99	0910	H2O	MCNADNOCK	1- SM poly																						TOTAL CADMIUM + CHROMIUM ONLY	
12	MCC22399-12					1- LG poly																							
13	MCC22399-13					3- VOA	X																				MS/MSO		
14	MCC22399-14		0945			3- VOA	X																						
15	MCC22399-15					1- SM poly																					TOTAL CADMIUM + CHROMIUM ONLY		
16	MCC22399-16					1- LG poly																							
17	MCC22399-17		1010			3- VOA	X																						
18	MCC22399-18					1- SM poly																					TOTAL CADMIUM + CHROMIUM ONLY		
19	MCC22399-19					1- LG poly																							
20	MCC22399-20		1015			3- VOA	X																						
Relinquished by: (Sampler's Signature) <u>[Signature]</u>			Date	Time	Relinquished by: <u>[Signature]</u>			Date	Time	To be completed by laboratory personnel: Samples chilled? <input type="checkbox"/> Yes <input type="checkbox"/> No Custody seals? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No All sample containers intact? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Courier <input type="checkbox"/> UPS/Fed Ex <input type="checkbox"/> Hand carried										Sample Disposal <input type="checkbox"/> Client will pick up <input type="checkbox"/> Return to client <input type="checkbox"/> Lab disposal fee \$5									
Received by: <u>[Signature]</u>			Date	Time	Received by: <u>[Signature]</u>			Date	Time																				
The delivery of samples and the signature on this chain of custody form constitutes authorization to perform the analyses specified above under the Terms and Conditions set forth on the back hereof.										Relinquished by: <u>[Signature]</u>			Date	Time															
										Received for Laboratory by: <u>[Signature]</u>			Date	Time															
Laboratory Notes: <u>SEND REPORT TO: MO TABOW 3922 EMERALD ST., #84 Torrance, CA 90503</u>																				Sample Locator No.									



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FAX (909) 793-1559

## Chain of Custody Record

Centrum Job #

14485

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### Analyses Requested

Project No.: <u>MONADNUCK - GW</u>		Project Name: <u>MONADNUCK - GW</u>		GC/MS: 8260 8240 8019		8080: Pesticides PCBs Pest/PCB		8015M: Diesel Fuel Screen		8015M: Gasoline 8020 Gas/BTEX		418.1 (TRPH)		Semivolatiles: 8270 625		Metals: <u>TOTAL CADMIUM + CHROMIUM ONLY</u>		Lead Only		pH TDS TSS Conductivity COD		Flashpoint Fluoride Hex Chrome		CYANIDE: 335.2 K910		Turn-around time <input type="checkbox"/> 24 Hr. RUSH* <input type="checkbox"/> 48 Hr. RUSH* <input checked="" type="checkbox"/> Normal TAT <small>Requires prior approval, additional charges apply</small>	
Project Manager: <u>JEFF GWINN</u>		Phone: <u>562/988-2755</u>		Fax: <u>562/988-2759</u>																						Remarks/ Special Instructions	
Client Name: <u>TRW</u>		Address: <u>3450 E. SPRING ST., STE 212</u>		<u>LONG BEACH, CA</u>																							
Centrum ID (Lab use only)	Sample ID (As it should appear on report)	Date sampled	Time sampled	Sample matrix	Site location	Containers: # and type																					
21	M0022399-21	2-23-99	1035	H2O	MONADNUCK	3-VOA	X																				
22	M0022399-22					1- <sup>SM</sup> poly																					TOTAL CADMIUM + CHROMIUM ONLY
23	M0022399-23					1- <sup>LG</sup> poly																					
24	M0022399-24		1110			3-VOA	X																				
25	M0022399-25					1- <sup>SM</sup> poly																					TOTAL CADMIUM + CHROMIUM ONLY
26	M0022399-26					1- <sup>LG</sup> poly																					
Relinquished by: (Sampler's Signature) <u>Bart W. Land</u>		Date	Time	Relinquished by: <u>R. B. B. B. B.</u>		Date	Time	To be completed by laboratory personnel:		Sample Disposal																	
Received by: <u>R. B. B. B. B.</u>		Date	Time	Received by:		Date	Time	Samples chilled? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/> Client will pick up																	
		Date	Time			Date	Time	Custody seals? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		<input type="checkbox"/> Return to client																	
The delivery of samples and the signature on this chain of custody form constitutes authorization to perform the analyses specified above under the Terms and Conditions set forth on the back hereof.				Relinquished by:		Date	Time	All sample containers intact? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		<input type="checkbox"/> Lab disposal fee \$5																	
				Received for Laboratory by: <u>[Signature]</u>		Date	Time	<input checked="" type="checkbox"/> Courier <input type="checkbox"/> UPS/Fed Ex <input type="checkbox"/> Hand carried																			
Laboratory Notes: <u>SEND REPORT TO: MR. TABON</u> <u>3922 EMERALD ST., #184</u> <u>TURANCE, 90503</u>										Sample Locator No.																	